

AMENDMENT

In the Claims:

Please amend claims 21, 27, 29, 31, 34, 37 and 39

Please cancel claims 40-44.

Claims 1-20 (Cancelled)

21. (Currently Amended) A process of forming basic zirconium sulphate [~~("ZBS")~~] (ZBS) comprising:

- (a) providing an alkali-fusion decomposed zircon product [~~("AFDZ")~~] (AFDZ) formed from reacting zircon with a source of alkali metal at elevated temperatures;
- (b) treating the AFDZ to form a solid containing a hydrated zirconium product in the form of hydrated zirconium oxide and/or hydrated zirconium basic carbonate by:
 - (i) leaching the AFDZ to provide a leachate containing non-zirconium containing products, and a solid residue containing the hydrated zirconium product; or
 - (ii) reacting the AFDZ with a source of sulphate to form an acid zirconium sulphate tetrahydrate (~~hereinafter referred to as AZST~~) (AZST) solution, and thereafter precipitating from the AZST solution a solid containing at least one of a hydrated zirconium basic carbonate (~~hereinafter referred to as ZBC~~) and/or (ZBC) and a precipitating hydrated zirconium oxide; and from the AZST solution
- (c) adding a source of sulphate to the solid hydrated zirconium product to obtain *in situ* formation of ZBS as a solid ~~thereon~~.

22. (Previously Presented) The process of claim 21 wherein the hydrated zirconium product is prepared by reacting the AFDZ with a source of sulphate to form the AZST solution; and thereafter precipitating the ZBC and/or precipitating the hydrated zirconium oxide from the AZST solution.

23. (Previously Presented) The process of claim 22 wherein the AZST solution is formed by reacting the AFDZ with a source of sulphate to form the AZST in the solid which contained the AFDZ; and then leaching the AZST containing solid to extract the AZST into solution.

24. (Previously Presented) The process of claim 22 wherein hydrated ZBC is precipitated from the AZST solution, and which hydrated ZBC is precipitated by adding a carbonate to the AZST solution.

25. (Previously Presented) The process of claim 21 wherein the solid hydrated zirconium product is formed by leaching the AFDZ with water to provide a leachate containing non-zirconium containing products, and a solid residue containing the hydrated zirconium oxide.

26. (Previously Presented) The process of claim 21 wherein the solid hydrated zirconium product is treated by adding a source of sulphate selected from the group consisting of H_2SO_4 and AZST thereto, thereby *in situ* forming solid ZBS thereon.

27. (Currently Amended) A process of beneficiating zircon by separating non-zirconium containing products therefrom comprising:

- (a) providing ~~[[AFDZ]]~~ an alkali-fusion decomposed zircon product (AFDZ) formed from reacting zircon with a source of alkali metal at elevated temperatures;
- (b) leaching the AFDZ to provide a leachate containing non-zirconium containing products, and a solid residue containing a hydrated zirconium product; and
- (c) adding a source of sulphate to the residue in order to obtain *in situ* formation of ~~[[ZBS]]~~ basic zirconium sulphate (ZBS) as a solid in the residue.

28. (Previously Presented) The process of claim 27 which includes the step of forming AFDZ by reacting zircon with a source of alkali metal at elevated temperatures and wherein the source of alkali metal comprises a compound selected from the group consisting of NaOH and Na_2CO_3 .

29. (Currently Amended) The process of claim 27 wherein the leaching ~~[[step]]~~ comprises leaching the AFDZ with water.

30. (Previously Presented) The process of claim 29 wherein the water leached AFDZ is acidified to a pH between 4 and 6 and then leached with water to remove non-zirconium containing products.

31. (Currently Amended) The process of claim 27 wherein the ZBS is formed by adding a stoichiometric quantity of a source of sulphate to the leached residue to form a mixture of the leached residue and the source of sulphate and heating the mixture.

32. (Previously Presented) The process of claim 31 wherein the source of sulphate comprises a compound selected from the group consisting of H_2SO_4 and AZST; and the mixture of the leached residue and source of sulphate then being heated at a temperature from 80 to 90°C for at least 10 minutes.

33. (Previously Presented) The process of claim 27 wherein the ZBS is purified by washing it with acid at elevated temperatures.

34. (Currently Amended) A process of producing zircon derived material suitable for pigments comprising:

- (a) providing ~~[[AFDZ]]~~ an alkali-fusion decomposed zircon product (AFDZ) formed from reacting zircon with a source of alkali metal at elevated temperatures;
- (b) leaching the AFDZ to provide a leachate containing non-zirconium containing products, and a solid residue containing a hydrated zirconium product;
- (c) adding a source of sulphate to the residue in order to obtain *in situ* formation of ~~[[("ZBS")]]~~ basic zirconium sulphate (ZBS) as a solid in the residue;
- (d) drying the ZBS-containing residue and calcining the dried ZBS-containing residue to form a calcined product which is a zircon derived material suitable for pigments.

35. (New) The process of claim 34 wherein the ZBS containing residue is purified prior to drying and calcining said residue.

36. (New) The process of claim 34 wherein the ZBS containing residue is subjected to a size reduction step to reduce the average particle size of the residue so that it is suitable for pigments.

37. (Currently Amended) A process of beneficiating zircon to produce opacifier material comprising:

providing ~~[[AFDZ]]~~ an alkali-fusion decomposed zircon product (AFDZ) formed from reacting zircon with a source of alkali metal at elevated temperatures;
leaching the AFDZ to provide a leachate containing non-zirconium containing products, and a solid residue containing a hydrated zirconium product;
adding a source of sulphate to the residue in order to obtain *in situ* formation of ~~[[ZBS]]~~ basic zirconium sulphate (ZBS) as a solid in the residue;
purifying the ZBS containing residue by removing non-zirconium containing species; and
calcining the purified ZBS containing product thereby to produce opacifier material.

38. (Currently Amended) The process of claim 37 which includes subjecting the opacifier material to a size reduction step, to achieve a d_{50} particle size of less than ~~[[1.5 μ m]]~~ 1.5 μ m.

39. (Currently Amended) A process of beneficiating zircon by separating non-zirconium containing products therefrom comprising:

providing ~~[[AFDZ]]~~ an alkali-fusion decomposed zircon product (AFDZ) formed from reacting zircon with a source alkali metal at elevated temperatures;
reacting the AFDZ with a source of sulphate to form an ~~[[AZST]]~~ acid zirconium sulphate tetrahydrate (AZST) solution;

precipitating hydrated ~~[[ZBC]]~~ zirconium basic carbonate (ZBC) or hydrated zirconium oxide and soluble sulphates from the AZST solution;
washing the precipitate to remove soluble sulphates; and
adding a source of sulphate to the washed precipitate in order to obtain *in situ* formation of ~~[[ZBS thereon]]~~ basic zirconium sulphate (ZBS).

Claims 40-44. (cancelled)